DETAILED SUPPLEMENTAL ADVISORY ACTION

Claims 1-5, 8-16 and 19-21 are pending after entry of the After Final Amendment filed with the Petition on 23 August 2010. This Action is responsive to the Granting of the Petition, mailed 16 September 2010. Attention is directed to the last page of the Petition Decision, dated 16 September 2010.

Response to Arguments

1. Appellants' arguments filed 23 August 2010 have been fully considered but they are not persuasive.

2. Appellants (page 8, 23 August 2010 response) assert the Appellants' previous comments are repeated and incorporated herein by reference.

(1) It is not clear form Appellants' reference incorporation what point(s) of argument that Appellants are relying that they are asserting patentability over the prior art of record.

(2) These previous comments are deemed to have been addressed for all entered papers, except those filed in the 23 August 2010 response, which are to follow.

(3) Regarding the amendments and comments filed in the After Final response filed on 07 July 2010, these appear the substantially the same as those filed in the 23 August 2010 response with the exception of the claim listing regarding the prior non-compliance thereof. Attention is directed to the 16 September 2010 Petition Decision.

Furthermore, said response was not entered as noted in the Advisory Action mailed, 21 July 2010, and consistent with the Petition Decision mailed 16 September 2010.

3. The following state of the art for drag reduction in aqueous systems was known at the time of Appellants' invention and characterized by Hellsten et al '784 (column 1, lines 11-47).

> Surfactants with the ability to form extremely long, cylindrical micelles have, in recent years, attracted a great interest as drag-reducing additives to systems with circulating water, especially those destined for heat or cold distribution.
>
> An important reason for this interest is that, although one desires to maintain a laminar flow in the conduits, one wishes at the same time to have turbulence in the heat exchangers to achieve therein a high heat transfer per unit area.
>
> As may easily be understood, fibres or chain polymers are unable to provide this double function which, however, can be achieved with thread-like micelles, since the flow rate (the Reynold's number) usually is much higher in the heat exchangers than in the conduit.
>
> The thread-like micelles are distinguished by operating in a fairly disorderly fashion at low Reynold's numbers (below 10^4), having no or only a very slight effect on the flow resistance. At higher Reynold's numbers (above 10^4), the micelles are paralleled and result in a drag reduction very close to that which is theoretically possible. At even higher Reynold's numbers (e.g. above (10^5), the shear forces in the liquid become so high that the micelles start to get torn and the drag-reducing effect rapidly decreases as the Reynold's number increases above this value.
>
> The range of Reynold's numbers within which the surface-active agents have a maximum drag-reducing effect is heavily dependent on the concentration, the range increasing with the concentration.
>
> By choosing the right concentration of surface-active agents and suitable flow rates in tubings and heat exchangers, it is thus possible to establish a laminar flow in the tubes and turbulence in the heat exchangers. Thus, the dimensions of both the tubes and the exchangers can be kept at a low level, or the number of pump stations, and consequently the pump work, can alternatively be reduced while retaining the same tubular dimensions.

It is noted that the Reynold's numbers are a unit-less ratio of the inertial force to the viscous force.

Common parameters affecting micellar formation are known in the surfactant and surface science art and include at least the following: the concentration of the

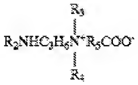
surfactants, the structure of the surfactants (*e.g.*, carbon number in hydrophobic group, type of polar group), the temperature of the micellar system, the ionic concentration of the micellar system (salting in effects/salting out effects), and any co-solvent concentration and/or effects. See Rosen, "Surfactants and Interfacial Phenomena", Wiley-Interscience Publication, John Wiley & Sons, NY, NY, USA, (Copyright 1978), Received 05-1983, Chapter 3, pages 83-122, particularly page 93.

4. Appellants (pages 8 and 9) assert that synergy has been demonstrated and that the examples of the instant specification represent evidence of said synergy. Appellants direct attention to Test 8, Test 2, and Test A (Table 1). These have been reproduced herein below. Said values were measured as follows.

> The drag-reducing properties of different drag-reducing additives were evaluated in a synthetic sea-water containing 568 mmoles of chloride, 482 mmoles of sodium, 54 mmoles of magnesium, 28 mmoles of sulphate, 10 mmoles of calcium and 10 mmoles of potassium per liter water. In the evaluation test, 40 ml of the synthetic sea-water containing the drag-reducing additives were stirred in a 50 ml glass beaker with a magnetic stirrer at a constant speed of 700 r.p.m. and at different temperatures. The inner diameter of the beaker was 40 mm and the stirrer bar was 6 x 20 mm. The absence of a vortex in the water surface or a vortex of maximum 2 mm indicated a considerable reduction of the drag. Without addition of a drag-reducing agent, the vortex was 30 mm.

Test	Zwitterionic Compound Type	ppm	Zwitterionic Compound Type	ppm	Anionic Compound Type	ppm	Temp. Range º C	Temp. Span º C
2	C14APB	200	---	---	C12S	30	16-46	30
8	C14APB	100	C18APB	100	C12S	20	14-60	46
A	C18APB	200	---	---	C12S	20	27-49	22
3	C14APB	200	---	---	C12S	15	16-50	34
6	C16APB	200	---	---	C12S	25	30-66	36
7	C16APB	200	---	---	C12S	13	34-65	31
13	C14APB	100	LinAPB	100	C12S	32	4-49	45
15	C14APB	100	SoyAPB	100	C12S	29	5-41	36

Formula I



Formula II

C14APB	a compound of formula I, where R_1 is a C_{14} acyl, R_3 and R_4 are methyl and R_5 is methylene;
C16APB	a compound of formula I, where R_1 is a C_{16} acyl, R_3 and R_4 are methyl and R_5 is methylene;
C18APB	a compound of formula II, where R_1 is a C_{18} acyl derived from oleic acid, R_3 and R_4 are methyl and R_5 is methylene;
LinAPB	a compound of formula II, where R_1 is an acyl derived from linseed oil, R_3 and R_4 are methyl and R_5 is methylene;
SoyAPB	a compound of formula II, where R_1 is an acyl derived from soy oil, R_3 and R_4 are methyl and R_5 is methylene;
C12S	is lauryl sulphate.

Appellants characterize the examples by the specific temperature range, range end points and the span of said range.

Appellants assert the examples are evidence of unexpected results. For results to be unexpected, they must:

(I) Be weighed against the evidence in support of the *prima facie* case of obviousness (MPEP 716.02(c)(I)). In the instant case, Hellsten et al '784 both broadly discloses the use of amidobetaines having acyl groups having 10-24 carbon atoms and the individual use of amidobetaines having acyl groups of 14-16 carbon atoms for temperatures below 30^o C and amidobetaines having acyl groups of 18-22 carbon atoms for temperatures between 50-120^o C. These are taught at a betaine to anionic weight ratio 20 : 1 to 1 : 2. The combination is used at concentrations of 0.1-10 kg/m^3

(0.1-10 kg/m^3 = 100-10,000 ppm). The anionic surfactants may be hydrocarbon sulfonates or sulfates and having 10-24 carbons, *e.g.*, C12S or dodecylsulfate.

The state of the art as described by the patentees (also Appellants) as drag reduction results from surfactant micellar formation. Common parameters are known that affect micellar formation. See above reference to Rosen.

Appellants assert a single comparative example is sufficient evidence to obviate the teaching of the Hellsten et al '784 reference. This has not been deemed persuasive because the evidence in support of the *prima facie* case of obviousness clearly outweighs said sole comparative example noted by appellants.

(II) They must be truely unexpected rather than mere difference (MPEP 716.02(c)(II)). Appellants assert the higher and lower temperature extremes and broader temperature span is representative of synergy and unexpected results. This has not been deemed persuasive because the Appellants' exemplified evidence further includes examples showing comparable values and ranges having varying temperature range, range end points and the span of said range. Appellants do not show the results are more than mere difference in micellar formation by varying known parameters that effect said micellar formation.

(III) They must be commensurate in scope with the claims (MPEP 716.02(d)). The claims broadly include a) amidobetaines having acyl groups of 12-16 carbon atoms with b) amidobetaines having acyl groups of 18-22 carbon atoms with hydrocarbon sulfonates or sulfates and having 8-14 carbons, *e.g.*, C12S or dodecylsulfate. These are at concentrations of a), b), and c) of 20-95 wt %, 10-70 wt % and 1-50 wt %.

Attention is directed to the preceding (I) above, wherein Hellsten et al '784 is characterized. Hellsten et al '784 discloses lauryl sulphonates as well as C12S, e.g., dodecylsulfate = laurysulfate. Hellsten et al '784 discloses a broader active concentration. Surfactant type and concentration are known to affect micellar formation, *i.e.*, drag reduction.

Appellants' asserted single comparative example is not sufficient evidence commensurate in scope with the claims. Hellsten et al '784 clearly discloses and teaches the broader subject matter instantly claimed, which applicants have failed to show unexpected results. This has not been deemed persuasive because the evidence in support of the *prima facie* case of obviousness clearly outweighs said example.

(IV) "Where the comparison is not identical with the reference disclosure, deviations therefrom should be explained, *In re Finley*, 174 F.2d 130, 81 USPQ 383 (CCPA 1949), and if not explained should be noted and evaluated, and if significant, explanation should be required. *In re Armstrong*, 280 F.2d 132, 126 USPQ 281 (CCPA 1960) (deviations from example were inconsequential)." See MPEP 716.02(e).

5. For at least the reasons above, Appellants' asserted synergistic effect has not been deemed persuasive for the claimed invention. The rejection over Hellsten et al '784 is still deemed proper and has been maintained.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (571) 272-1089. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David W. Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel S. Metzmaier/
Primary Examiner, Art Unit 1762

DSM